



INFLUENCE OF BIG FIVE PERSONALITY TRAITS ON THE ADOPTION OF BANKING CHATBOTS: AN EMPIRICAL STUDY BASED ON THE TECHNOLOGY ACCEPTANCE MODEL

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Abstract : The rapid digitalisation of the banking sector has made conversational chatbots an important channel for customer service, yet adoption remains uneven across customers. This study examines how the Big Five personality traits – openness, conscientiousness, extraversion, agreeableness and neuroticism – influence the adoption of banking chatbots, using the Technology Acceptance Model (TAM) as the theoretical base. Primary data were collected through a structured questionnaire from 100 bank customers and analysed using chi-square test, Pearson correlation and multiple regression. The results show that openness ($r = 0.443$) and conscientiousness ($r = 0.235$) are positively, and neuroticism ($r = -0.418$) negatively, related to the intention to adopt chatbots, while extraversion and agreeableness show no significant relationship. Perceived usefulness and perceived ease of use jointly explain 31.2% of the variance in adoption intention, with perceived usefulness being the stronger predictor. A significant association was also found between the level of openness and the adoption status of customers. The findings suggest that banks should design personalised, easy-to-use chatbot interfaces and targeted awareness programmes for customers with low openness and high neuroticism to maximise chatbot adoption.

Key words: *Big Five personality traits, Banking chatbots, Technology Acceptance Model, Perceived usefulness, Perceived ease of use, Adoption intention*

1.Introduction

Artificial intelligence has changed the way banks interact with their customers. Banking chatbots – conversational agents that answer queries, check balances, block cards, and guide customers through transactions around the clock – have become a standard feature of mobile and internet banking in India and across the world. For banks they reduce service costs and waiting time; for customers they promise convenience and instant support. Despite these advantages, customers do not adopt chatbots at the same pace. Many continue to prefer branch visits or call centres, which shows that adoption depends not only on the technology but also on the individual who uses it.

The Technology Acceptance Model (Davis, 1989) explains technology use through two beliefs: perceived usefulness and perceived ease of use, which shape the intention to adopt. However, TAM treats these beliefs as if they were formed in the same way by every user. Personality psychology offers a useful complement. The Five-Factor or Big Five model (Goldberg, 1990; McCrae & John, 1992) describes individual differences through openness to experience, conscientiousness, extraversion, agreeableness and neuroticism. A customer

who is curious and open to new experiences may find a chatbot exciting, whereas a highly anxious customer may worry about errors, security and loss of control. Understanding these differences can help banks segment their customers and design chatbot services that are accepted more readily. Against this background, the present study investigates the influence of Big Five personality traits on the adoption of banking chatbots within the TAM framework.

2. Review of literature

Davis (1989) introduced the Technology Acceptance Model and showed that perceived usefulness and perceived ease of use are the primary determinants of a user's intention to accept an information technology. **Venkatesh and Davis** (2000) extended the model (TAM2) by adding social influence and cognitive instrumental processes, while **Venkatesh, Morris, Davis and Davis** (2003) integrated eight earlier models into the Unified Theory of Acceptance and Use of Technology (UTAUT). These studies established the theoretical base for most later research on technology adoption, including digital banking.

Goldberg (1990) and **McCrae and John** (1992) established the Big Five as a widely accepted taxonomy of personality, and **Costa and McCrae** (1992) developed the NEO-PI-R and NEO-FFI instruments to measure it. **John and Srivastava** (1999) reviewed the history and measurement of the Big Five and described the Big Five Inventory (BFI), a short scale that is widely used in survey research.

Devaraj, Easley and Crant (2008) related the five-factor model to technology acceptance and use, arguing that personality should be examined together with TAM constructs and not in isolation. **Svensen, Johnsen, Almas-Sorensen and Vitterso** (2013) studied the influence of personality factors on the core TAM constructs and found that personality traits are associated with perceived usefulness and perceived ease of use. **Barnett, Pearson, Pearson and Kellermanns** (2015) examined five-factor personality traits as predictors of perceived and actual technology usage and reported that certain traits are linked to usage. Earlier, **Landers and Lounsbury** (2006) investigated Big Five and narrow personality traits in relation to Internet usage, which suggests that personality shapes how individuals engage with online services.

Venkatesh (2000) extended TAM by identifying the determinants of perceived ease of use, showing that general computer self-efficacy, perceived control, intrinsic motivation and computer anxiety shape ease-of-use beliefs. **Venkatesh and Bala** (2008) integrated these findings into TAM3, which adds individual differences, system characteristics and facilitating conditions as antecedents of the two core beliefs. **Venkatesh, Thong and Xu** (2012) later extended UTAUT to the consumer context (UTAUT2) by adding hedonic motivation, price value and habit, while **Gefen, Karahanna and Straub** (2003) integrated trust with TAM in an online shopping setting and showed that trust matters alongside usefulness and ease of use when transactions involve uncertainty. These extensions indicate that individual dispositions and trust-related beliefs sit upstream of the basic TAM constructs.

Agarwal and Prasad (1998) defined personal innovativeness in the domain of information technology as a willingness to try out new technologies, a construct close to the openness trait, and showed its importance in explaining adoption-related beliefs. **Thatcher and Perrewé** (2002) examined individual traits as antecedents of computer anxiety and computer self-efficacy, which suggests that dispositional characteristics influence how comfortable people feel with technology. **McElroy, Hendrickson, Townsend and DeMarie** (2007) compared personality and cognitive style as dispositional factors in Internet use, and **Zhou and Lu** (2011) studied the effects of personality traits on user acceptance of mobile commerce. **Junglas, Johnson and Spitzmuller** (2008) linked personality traits to concern for privacy in location-based services, which is relevant for financial services where customers share sensitive data.

Luarn and Lin (2005) extended TAM with perceived credibility, self-efficacy and financial cost to explain the behavioural intention to use mobile banking. **Lee** (2009) integrated TAM and the theory of planned behaviour with perceived risk and perceived benefit to explain the adoption of internet banking. **Kesharwani and Singh Bisht** (2012) extended TAM with trust and perceived risk in the Indian internet banking context, and **Oliveira, Faria, Thomas and Popovic** (2014) combined UTAUT with task-technology fit and initial trust to understand mobile banking adoption. Together, these studies show that usefulness, ease of use, trust and perceived risk are central to the acceptance of digital banking channels.

Brandtzaeg and Folstad (2017) reported that productivity, that is, quick and efficient access to help and information, is the main reason people use chatbots, followed by entertainment, social and relational motives and curiosity about novelty. **Eren** (2021) investigated the determinants of customer satisfaction with a banking chatbot application in Turkey, **Pillai and Sivathanu** (2020) studied the adoption of AI-based chatbots in hospitality and tourism, and **Kasilingam** (2020) analysed the attitude and intention to use smartphone chatbots for shopping. **Rese, Ganster and Baier** (2020) developed a measure of chatbot acceptance in retail customer communication. These studies generally report that usefulness and ease of use are important drivers of chatbot acceptance. **Shumanov and Johnson** (2021) further showed that making chatbot conversations congruent with users' personality can improve outcomes such as purchase behaviour, which supports the idea that personality is relevant to chatbot-based service encounters.

Taken together, the literature indicates that personality traits are relevant to technology acceptance, and that their effect may operate through the beliefs proposed by TAM. However, evidence on conversational banking agents is still limited, particularly from emerging economies. The present study addresses this gap by testing the relationship between Big Five traits, TAM constructs and the adoption of banking chatbots.

3. Research Methodology

The present study relies on both primary and secondary data sources to inspect the role of personality traits in the adoption of banking chatbots, with particular emphasis on the Big Five traits and the constructs of the Technology Acceptance Model. Primary data were collected through a structured questionnaire administered to 100 bank customers who had access to a chatbot on their bank's mobile app or website. Respondents were selected using convenience sampling to include different age groups, education levels and occupations. Secondary data were sourced from research journals, books and reports on digital banking and chatbot services.

The questionnaire had three parts: demographic profile, Big Five personality traits, and TAM constructs. Each of the five personality traits was measured with four items adapted from the Big Five Inventory (John & Srivastava, 1999), and perceived usefulness, perceived ease of use and adoption intention were measured with four items each, adapted from Davis (1989). All items were rated on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree), and construct scores were computed as the mean of the items. Reliability was tested using Cronbach's alpha. The collected data were analysed using descriptive statistics, and three analysis techniques were applied to test the hypotheses: Pearson correlation, multiple regression analysis and chi-square test.

4. Research Objectives

1. To examine the relationship between Big Five personality traits and the intention to adopt banking chatbots.
2. To analyse the effect of perceived usefulness and perceived ease of use on the adoption intention of banking chatbots.
3. To inspect the association between the level of openness and the adoption status of banking chatbots.
4. To provide suggestions to banks for improving chatbot adoption among customers with different personality profiles.

Research Hypothesis Development

H0. There is no significant relationship between Big Five personality traits and the adoption intention of banking chatbots

H1. There is significant relationship between Big Five personality traits and the adoption intention of banking chatbots

H0. Perceived usefulness and perceived ease of use have no significant effect on the adoption intention of banking chatbots

H2. Perceived usefulness and perceived ease of use have significant effect on the adoption intention of banking chatbots

H0. There is no significant association between the level of openness and the adoption status of banking chatbots

H3. There is significant association between the level of openness and the adoption status of banking chatbots

Result**Table.1 Demographic profile of the respondents (N = 100)**

Variable	Category	No. of respondents	Percentage
Gender	Female	48	48.0%
	Male	52	52.0%
Age	18-25	28	28.0%
	26-35	36	36.0%
	36-45	23	23.0%
	Above 45	13	13.0%
Education	Graduate	38	38.0%
	Post-graduate	38	38.0%
	Professional/Others	24	24.0%
Occupation	Business/Self-employed	23	23.0%
	Others	11	11.0%
	Salaried	35	35.0%
	Student	31	31.0%

Source: Authors' computation based on Primary Data

Table.2 Descriptive statistics and reliability of the constructs

Construct	No. of items	Mean	Std. Deviation	Cronbach's alpha
Openness	4	3.69	0.57	0.844
Conscientiousness	4	3.82	0.58	0.856
Extraversion	4	3.27	0.60	0.872
Agreeableness	4	3.80	0.60	0.865
Neuroticism	4	2.94	0.59	0.845
Perceived Usefulness	4	3.82	0.58	0.836
Perceived Ease of Use	4	3.85	0.56	0.849
Adoption Intention	4	3.70	0.54	0.815

Source: Authors' computation based on Primary Data

All constructs have Cronbach's alpha values above 0.70 (0.815 to 0.872), which confirms the internal consistency of the scales (Nunnally, 1978). Respondents show the highest mean scores for perceived ease of use (3.85) and conscientiousness (3.82), and the lowest for neuroticism (2.94).

Research Hypothesis Development

H0. There is no significant relationship between Big Five personality traits and the adoption intention of banking chatbots

H1. There is significant relationship between Big Five personality traits and the adoption intention of banking chatbots

Result (Pearson Correlation)**Table.3 Relationship between Big Five personality traits and the adoption intention of banking chatbots**

Personality trait	Pearson r	p-value	Result
Openness	0.443	<.001	Significant
Conscientiousness	0.235	.019	Significant
Extraversion	0.152	.131	Not significant
Agreeableness	0.047	.643	Not significant
Neuroticism	-0.418	<.001	Significant

Source: Authors' computation based on Primary Data

Since the p-values for openness (<0.001), conscientiousness (0.019) and neuroticism (<0.001) are less than 0.05, we reject the null hypothesis for these traits. There is a significant positive relationship of openness ($r = 0.443$) and conscientiousness ($r = 0.235$), and a significant negative relationship of neuroticism ($r = -0.418$), with the adoption intention of banking chatbots. For extraversion ($p = 0.131$) and agreeableness ($p = 0.643$) the null hypothesis cannot be rejected. Therefore, H1 is partially supported.

Research Hypothesis Development

H0. Perceived usefulness and perceived ease of use have no significant effect on the adoption intention of banking chatbots

H2. Perceived usefulness and perceived ease of use have significant effect on the adoption intention of banking chatbots

Result (Multiple Regression)**Table.4 Effect of Perceived Usefulness and Perceived Ease of Use on Adoption Intention**

Predictor	B	Std. Error	Beta	t-value	p-value
(Constant)	1.254	0.373	-	3.36	.001
Perceived Usefulness	0.354	0.086	0.376	4.09	<.001
Perceived Ease of Use	0.283	0.089	0.290	3.16	.002

Source: Authors' computation based on Primary Data

Dependent variable: Adoption Intention. $R^2 = 0.312$, Adjusted $R^2 = 0.298$, $F(2, 97) = 21.98$, $p < .001$

The regression model is statistically significant ($F = 21.98$, $p < 0.001$) and explains 31.2% of the variance in adoption intention. Both perceived usefulness ($\beta = 0.376$, $p < 0.001$) and perceived ease of use ($\beta = 0.290$, $p = 0.002$) have a significant positive effect. Since the p-values are less than 0.05, we reject the null hypothesis. Therefore, perceived usefulness and perceived ease of use have a significant effect on the adoption intention of banking chatbots, and H2 is supported.

Research Hypothesis Development

H0. There is no significant association between the level of openness and the adoption status of banking chatbots

H3. There is significant association between the level of openness and the adoption status of banking chatbots

Result (Chi-Square Test)**Table.5 Relationship between the level of Openness and Adoption status of banking chatbots**

Openness level	Non-adopter	Occasional user	Regular adopter	Total
Low Openness	18	10	4	32
Moderate Openness	16	22	8	46
High Openness	0	14	8	22
Total	34	46	20	100

Source: Authors' computation based on Primary Data

Chi-Square Tests

	Value	df	p-value
Pearson Chi-Square	19.184a	4	.001

a. 1 cell (11.1%) have expected count less than 5. The minimum expected count is 4.40.

Openness level and adoption status were classified from the mean construct scores: Low (up to 3.25), Moderate (3.26–4.00) and High (above 4.00).

Since the p-value (0.001) < 0.05, we reject the null hypothesis. There is a significant association between the level of openness and the adoption status of banking chatbots. The calculated Chi-square value is 19.184 with 4 degrees of freedom and a p-value of 0.001. None of the customers with high openness were non-adopters, whereas more than half of the customers with low openness (18 out of 32) had not adopted chatbots. Therefore, H3 is supported.

5. Discussions

The results of this study demonstrate that personality traits and TAM beliefs together provide a useful explanation of banking chatbot adoption. Openness has the strongest positive relationship with adoption intention among the personality traits. Customers who are curious, imaginative and willing to try new things are more likely to experiment with chatbot services, which agrees with the view that open individuals are early adopters of new technology. Conscientiousness shows a smaller but significant positive relationship; organised and goal-oriented customers appear to value the speed and accuracy that a chatbot offers in routine banking tasks. Neuroticism is negatively related to adoption intention, indicating that anxious customers are concerned about security, mistakes and the absence of human support, and therefore hesitate to depend on an automated agent for financial matters.

Extraversion and agreeableness did not show a significant relationship with adoption intention. A possible reason is that a chatbot is a task-oriented and non-social channel, so traits linked to social interaction and cooperation matter less than those linked to novelty, diligence and emotional stability. The regression results confirm the core logic of TAM: perceived usefulness and perceived ease of use both influence adoption intention, with usefulness being the stronger factor. Customers adopt a chatbot mainly when it clearly helps them complete banking tasks, and ease of use adds to this effect. The chi-square result further shows that customers with high openness are concentrated among occasional and regular users, while low-openness customers dominate the non-adopter group.

These findings have practical value for banks. Chatbots can be presented as helpful and simple to use, with clear demonstrations of tasks that save time. For customers who are less open or more anxious, banks can provide guided onboarding, visible security assurances and an easy option to transfer to a human agent. Such personality-sensitive communication can make chatbot services more inclusive and increase adoption across customer groups.

6. Limitation of the study

Despite offering useful insights into the influence of personality on chatbot adoption, this study has a number of drawbacks. First, the study included only 100 respondents selected through convenience sampling, which

is a small sample size that may not reflect the diversity of all bank customers. Additionally, the cross-sectional nature of the data limits the ability to assess changes in attitude over time or actual usage behaviour, since adoption intention and self-reported status were measured. Reliance on self-reported questionnaires also raises the risk of response bias. The Big Five traits were measured with short four-item scales, which may not capture the full breadth of each trait. Further, the study did not examine other factors such as trust, perceived security, privacy concerns and prior digital banking experience, which may also influence chatbot adoption. More comprehensive, larger-sample and longitudinal research is needed to support these findings.

7. Conclusion

The study emphasizes how personality traits and technology acceptance beliefs influence the adoption of banking chatbots. Through correlation, regression and chi-square analysis, it demonstrates that openness and conscientiousness encourage, and neuroticism discourages, the intention to adopt chatbots, while extraversion and agreeableness are not significant. Perceived usefulness and perceived ease of use jointly explain about 31% of the variance in adoption intention, and the level of openness is significantly associated with the adoption status of customers. The findings show that the Technology Acceptance Model becomes more informative when individual personality differences are considered. To increase chatbot adoption, banks should improve the usefulness and simplicity of chatbot services, and adopt personalised communication, reassurance and human-support options for customers who are less open to new technology or more anxious about it. Future studies may extend the model with trust and perceived risk and test it on larger and more diverse samples.

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